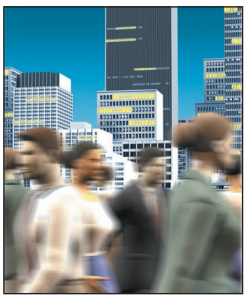

Twelve Billion Bargaining Chips

The Web Side of the Net Neutrality Debate

Daniel J. Weitzner • *MIT*

Net neutrality — the issue of whether ISPs should be allowed to give (or, more likely, sell) higher-performance access to content or services from certain providers — has been the hot Internet public policy issue in the US this past year. Some network owners (such as Bell South and SBC) indicate that they'd like to charge large content providers (Google, Yahoo, Microsoft, eBay, Amazon, and so on) extra in order to reach potential customers. The pro-neutrality camp has argued that Internet service providers (ISPs) must be legally prohibited from doing so, lest we lose the benefits that the Internet has enabled. Those opposed to neutrality requirements view the Internet overall as a good thing, but argue that market forces will assure continued access to the Internet on reasonable terms and that legislating this requirement will stifle investment in new broadband services.

Web users have a unique set of interests at stake in this debate, but they also have unexploited bargaining chips — roughly 12 billion, to be exact (or however many Web pages exist at the moment). The real threats to the Web's vitality and its hundreds of millions of users have been largely overlooked in this debate, however, as the legislative debate has overemphasized the interests of larger content providers and network operators. As I will illustrate, today's Web users need a neutral, nondiscriminatory Internet as an open platform to support the Web's operation. The good news is that as it moves from a read-only medium, in which most users are merely information consumers, to a read–write medium in which users post pictures, write public blog entries, and link to each other's profiles, active users might have an opportunity to preserve the Internet's open, nondiscriminatory (neutral) operation on which they depend.

Battle of the Titans

What we've seen of the debate so far has been mostly a battle of the titans: large e-commerce companies who just seem to mint more and more money from the Web versus gigantic network operators intent on financing the development of ultra-high-speed fiber-optic networks by tapping into Web profits. Commenting on the threat of a nonneutral Internet, Google's Vint Cerf stated a worry that many have:

> 'In the Internet world, both ends essentially pay for access to the Internet system, and so the providers of access get compensated by the users at each end,' said Cerf, who helped develop the Internet's basic communications protocol. 'My big concern is that suddenly access providers want to step in the middle and create a toll road to limit customers' ability to get access to services of their choice, even though they have paid for access to the network in the first place.'[1]

Traditional telecommunications companies tend to have a different view of this issue. In a statement that is widely credited with unleashing the debate last year, Ed Whitacre, CEO of AT&T, declared

> Now what they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital, and we have to have a return on it. So there's going to have to be some mechanism for these people who use these pipes to pay for the portion they're using. Why should they be allowed to use my pipes? The Internet can't be free in that sense, because we and the cable companies have made an investment, and for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts![2]

Indeed, large network operators such as AT&T, Time Warner, Verizon, and Comcast are making substantial investments in their physical plants to carry more traditional cable television services, voice- and video-over-IP, and higher-capacity

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Internet access services. What's more, the large Internet companies Whitacre refers to are showing clear revenue streams, built in part on services that require higher and higher bandwidth. Against this background, Wall Street analysts have expressed skepticism about whether new "full-service" networks of the sort AT&T and its peers are building will really turn a profit. So, whether you agree with Whitacre's proposal to change Internet services' price model, you can certainly see why network operators are looking for a different business relationship with the very profitable services that ride over their networks.

But this isn't just a battle between commercial competitors eager to get something for nothing. Even the liberal guru of deregulation, Alfred Kahn — who brought us the modern, competitive airline industry — argues against Net neutrality regulation. As Kahn recently wrote,

> Demonstrably, those broadband facilities have to be created by investments — especially huge ones by the telephone companies; and applications requiring priority transmission can entail lower-priority transmission of others. Except as the offer of broadband service is subsidized by governments — a possibility I do not exclude — those costs must be collected from users — subscribers to broadband services, on the one side, providers of programming or content on the other, or some combination of the two — just as in the case of newspapers or television stations.[3]

What exactly is wrong with making customers or service providers pay for the choices they make? After all, we all already pay for the network services that we use in rough proportion to the cost of those services. Today, network costs are allocated between users (who pay for their own Internet access) and large services (such as Amazon), which pay a much higher price for their Internet connection because they put a heavier traffic load on the Internet. So, what would be wrong with a change to this arrangement — that is, with allowing large content providers such as Google or Amazon to pay for having their data get to customers on an expedited basis, even to the virtual exclusion of their competitors?

What's wrong is that forcing a Web site operator to pay twice (once to its own ISP and once to the ISP of every single user who wants access to that sites' content) so that a user can access its content would begin to break the unique many-to-many nature of how information is linked together on the Internet. Once data is put on a Web site, the speaker can be confident that anyone in the world can reach that data, regardless of which ISP they use. Although not everyone who requests that data will have the same quality of service, the requestor decides what service level is appropriate for his or her needs. The content provider need not be involved in this decision nor worry about negotiating a transport arrangement with every potential user's ISP. The Internet's genius is that it avoids this bottleneck and acts as an extraordinarily open conduit for speech and commerce, making it different from other communications networks.

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Everyone Is (Finally) a Publisher

Although the Web was created with the goal that everyone could be a publisher, in its early years, users were mostly consumers rather than information producers. Today, however, more and more of the Web is made up of user-created content, including shared photos and blog text. Finally, the Internet's early promise, recognized by US courts in the Web's first years, is being realized. Writing to defend free speech rights on the Web, a US federal judge said,

> The Internet is a far more speech-enhancing medium than print, the village green, or the mails.... The Internet may fairly be regarded as a never-ending worldwide conversation.[4]

Today, in realizing this vision, nearly 10 percent of US Web users have their own blogs, and 40 percent read blogs.[5]

As I mentioned earlier, the Web depends on the Internet's many-to-many communications features. Some of the most socially valuable and commercially popular Web services exploit the ability to link together information from many sources across the Web into what appears to be a single information resource (that is, a Web page). Consider how users build blogs in an ad hoc manner, on top of the neutral Internet transport and routing platform.

Figure 1 shows how a single blog aggregates data from several other Web services (such as Flickr and Amazon) along with the information on the blog site itself. On the left we see how the blog is rendered, pulling together information from a variety of sources. On the right, we see the information's actual location, along with the many network connections that are required for the information to come together.

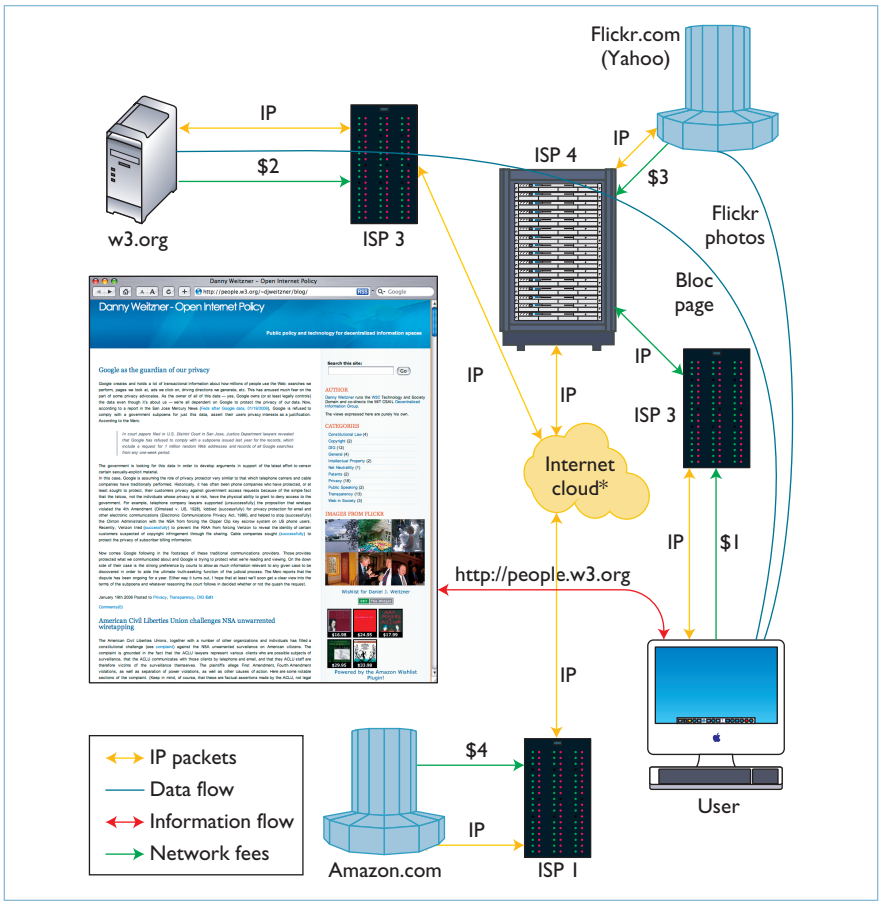

Figure 1. A typical blog's rendering and information flow. The left side shows how the blog pulls information together from various sources; the right depicts the information's actual location and the network connections necessary to bring it together.

Although the blog appears as a single page, being able to see it as the creator intends requires access through four ISPs to three different information stores located at various places across the Web.

In examining how this blog works, the first key observation is that users created it and all other blogs without any need for permission, either from the blogger's ISP or the sites from which the other data comes. These independent sites have no prior connection arrangements — their linkage is possible due to the blog host's creativity and coordination. To the end user, all the data on the page appears to be located at the same URL, but it's actually drawn from several different sites. The blog creator presumes that all content included on the blog page will in fact be delivered to the end user because of the long-standing and fundamental expectation that intermediary ISPs don't block or interfere with any legitimate content on today's Internet. Thus, a nonneutral Internet threatens to make some of the content that bloggers seek to combine unavailable to certain users because their ISPs might block or degrade access to it. This would impose an insurmountable burden on bloggers and other Internet speakers to determine in advance which readers have access to which sets of content and which are blocked from access because their ISPs have discriminatory policies.

Blogs are just one of the current hot new Web applications credited with enabling a wide variety of political, cultural, and economic benefits. Social-networking sites, such as MySpace, also rely on individual creativity and linking among sites. Indeed, these applications show how the Internet's open, neutral platform enables a unique style of decentralized information flow. Although blogs are this year's leading-edge application, other types of applications and services that we haven't yet imagined will undoubtedly come along as well. However, this will be possible only if we maintain the Internet's essential neutrality features going forward.

The Power of 12 Billion Web Pages

As blogging shows, the creation of value on the Web follows a unique, decentralized, and bottom-up model. The Net neutrality debate, with its narrow focus on large commercial services, has failed to consider the value created Web page by Web page via efforts from hundreds of millions of individual users. Beyond content creation, users make huge contributions to the Web through the links that they create from one page to another. Indeed, the Web would be considerably less useful (if not almost useless) without these links because they help users navigate, and because mining and analyzing them makes modern search engines possible.

It's certainly important that the public policy debate take this aspect of the Web value chain into account; it might even be time to consider how page creators can flex their muscles a bit to be sure that the Internet continues to operate in a way that supports this decentralized value creation.

Yet in the debate, network operators talk as if the value and revenue Web use generates will be divided up solely among themselves. To be sure, these ISPs do invest a lot of capital building the network infrastructure that provides Internet access, and large e-commerce companies invest in designing and maintaining information platforms to host, process, and

analyze Web content. But what about users who actually create content and links? Successful e-commerce companies have figured out that to attract users or content creators, their business models must give some value back. Google mines all of the links Web users make and gives us all a pretty useful search function. In exchange, it implicitly profiles individual user behavior and earns huge amounts of money by selling targeted advertisements based on those profiles. (Some privacy advocates express concern about this profiling's scope, but otherwise, this seems to be a good deal for Web users.) Similarly, services such as Flickr, Windows Live, and Livejournal provide large amounts of storage and information-organizing tools for free in exchange for the opportunity to advertise to users. These services make plenty of money, but in a way that recognizes user and content creator contributions.

So how can we Web users ensure that our creative efforts toward building the Web are recognized and rewarded in the Net neutrality debate? Of course, we can become active in the debate itself, but if that doesn't turn out well, we might have to consider going further. Right now, the content we create is available free to anyone who wants to use it, generally with very few copyright restrictions. It's these individual pages and the links among them that give ISPs a product worth selling to begin with.

If ISPs actually start restricting Web access in an effort to extract unreasonable fees or exclusive deals from certain content providers, thus breaking the Web's interconnectedness, the ultimate creators of value on the Web can strike back. We could refuse to allow our creative work (protected by copyright law) to flow across nonneutral, discriminatory Internet connections. This option is available to both individual Web page creators, including bloggers, and to larger e-commerce sites. No one who cares about the Web's vitality should agree to participate in something that looks like the Internet but doesn't have the necessary openness on which the Web and other Internet services depend.

Will this sort of boycott actually happen? I hope not. It would certainly take a large-scale organizing effort and clearly produce bad results. But the fact that it can happen should cause policy makers to look hard at what it will take to preserve the Internet's unique, neutral features. Most important, it should make ISPs thinking of imposing discriminatory pricing realize that they'd only be killing the reason that people want to buy Web access in the first place.

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